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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/678,989	10/02/2003	Gi Youl Kim	PA2625US	1554

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EXAMINER

ZERVIGON, RUDY

ART UNIT	PAPER NUMBER
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1763

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/15/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/678,989	Applicant(s) KIM ET AL.	
	Examiner Rudy Zervigon	Art Unit 1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 December 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,5 and 7-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,5 and 7-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 1, 5, and 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over van Os; Ron et al. (US 5,792,272 A) in view of Kholodenko; Arnold et al. (US 6185839 B1). van Os teaches a deposition system (column 2; lines 10-15) comprising: a first gas (column 4, lines 18-31) fluidly coupled to a chemical vapor deposition chamber (volume 16+18; Figure 1; column 3, lines 30-56) through a first gas distribution channel (56; Figure 4) disposed within a lid (10+17; Figure 2) of the chemical vapor deposition chamber (volume 16+18; Figure 1; column 3, lines 30-56), the lid (10+17; Figure 2) further supporting a shower head (15; Figure 2,3A) disposed within the chemical vapor deposition chamber (volume 16+18; Figure 1; column 3, lines 30-56) and separate from the first gas distribution channel (56; Figure 4), said lid (10+17; Figure 2) having an interior rim (70; Figure 4) including a plurality of cleaning gas injection ports (44b; Figure 4) each of which is fluidly connected to the first gas distribution channel (56; Figure 4) – claim 1

van Os does not teach various ones of the cleaning gas injection ports (44b; Figure 4) which are orientated at different angles with respect to an interior of a wall (inside surface of 70; Figure 4) of the chemical vapor deposition chamber, said wall (inside surface of 70; Figure 4) being attached to said lid (10+17; Figure 2)

van Os further does not teach:

Art Unit: 1763

- i. The deposition system (column 2; lines 10-15) of claim 1, wherein the plurality of first gas injection ports (44a,b; Figure 4; column 7, lines 18-31) include a first subset of the plurality of first gas injection ports (44a,b; Figure 4; column 7, lines 18-31) disposed at a first angle (column 7, lines 48-56) relative to interior of the wall (inside surface of 70; Figure 4) of the deposition chamber (volume 16+18; Figure 1; column 3, lines 30-56), and a second subset of the plurality of first gas injection ports (44a,b; Figure 4; column 7, lines 18-31) disposed at a second angle (column 7, lines 48-56) relative to the interior of the walls (inside surface of 70; Figure 4) - claim 5
- ii. The deposition system (column 2; lines 10-15) of claim 1, further including internal plumbing (46,48; Figure 4; column 7, lines 18-31) coupling the first gas (column 4, lines 18-31) distribution channel (56; Figure 4; column 7, lines 18-31) to the first gas source, within the wall (inside surface of 70; Figure 4) of the deposition chamber (volume 16+18; Figure 1; column 3, lines 30-56) - claim 7
- iii. The deposition system (column 2; lines 10-15) of claim 1, further including a plurality of channel openings (baffle plate 62; Figure 4; column 7, lines 18-31) coupling the internal plumbing to the first gas (column 4, lines 18-31) distribution channel (56; Figure 4; column 7, lines 18-31) - claim 8
- iv. The deposition system (column 2; lines 10-15) of claim 1, further including a chamber collar (40; Figure 4) separating the lid (10+17; Figure 2) of the deposition chamber (volume 16+18; Figure 1; column 3, lines 30-56) from wall and including internal plumbing (46,48; Figure 4; column 7, lines 18-31) coupling the cleaning gas (column 4,

lines 18-31) distribution channel (56; Figure 4; column 7, lines 18-31) to the first gas source— claim 9

van Os does not teach a first gas “source”.

Kholodenko teaches a deposition system (Figure 1) including a “first gas source” (95, Figure 1). Kholodenko further teaches a similar interior rim (148; Figure 1) including cleaning gas injection ports (140a, 140c; Figure 1) which are orientated at different angles with respect to an interior of a wall (inside surface of 148; Figure 1) of the chamber (25; Figure 1).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add Kholodenko’s first gas source and optimize the angle(s) of van Os’s gas injection ports (44b; Figure 4).

Motivation to add Kholodenko’s first gas source and optimize the angle(s) of van Os’s gas injection ports (44b; Figure 4) is for delivering a desired process gas and for providing a “uniform flux of process gas entering the chamber 2” as taught by Kholodenko (column 5; lines 25-39). Further, it is well established that changes in apparatus dimensions are within the level of ordinary skill in the art.(Gardner v. TEC Systems, Inc. , 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied , 469 U.S. 830, 225 USPQ 232 (1984); In re Rose , 220 F.2d 459, 105 USPQ 237 (CCPA 1955); In re Rinehart, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); See MPEP 2144.04)

Response to Arguments

3. Applicant’s arguments filed December 6, 2006 have been fully considered but they are not persuasive.
4. Applicant states:

Art Unit: 1763

“

Claim 1 is directed to a chemical vapor deposition system with a lid supporting a shower head disposed within the chemical vapor deposition chamber and separate from a first gas distribution channel disposed within the lid. Neither van Os nor Kholodenko disclose or suggest such a lid. In the Office Action, the Examiner suggests the element is disclosed by van Os.

“

As stated previously, the Examiner's citation of the teaching of van Os's lid (10+17; Figure 2) and shower head (15; Figure 2,3A). Specifically, it is clearly evident that van Os's components are orientated in the claimed configuration and function in the same matter.

5. Applicant states:

“

Therefore, gas injection manifold 17 does not form a lid on a CVD chamber, nor is it a shower head supported by such a lid, as is claimed in claim 1.

“

The Examiner disagrees. Further, manifold 17 forms a continuous seal with the components above it and can reasonably and broadly be interpreted as a lid.

6. Applicant states:

“

However, the gas injection manifold 15 does not support a shower head, separate from a gas distribution channel, for introducing processing gases into the chamber. Applicants' FIG. 1 clearly shows a shower head (e.g., element 160) as a separate component supported by the lid (e.g., element 115b) for introducing processing gases into the processing chamber. Van Os

Art Unit: 1763

does not describe or suggest a lid supporting a shower head separate from a gas distribution channel, as is claimed in claim 1.

“

In response, the Examiner's of record interpretation of van Os *does not* state that “gas injection manifold 15 supports a shower head”. To the contrary, the claimed requirements, in the context of the van Os teaching clearly shows “the lid (10+17; Figure 2) further supporting a shower head (15; Figure 2,3A) disposed within the chemical vapor deposition chamber (volume 16+18; Figure 1; column 3, lines 30-56) and separate from the first gas distribution channel (56; Figure 4)”

7. Applicant states:

“

Furthermore, claim 1 states that the shower head is separate from the gas distribution channel. Accordingly, one skilled in the art will appreciate that process gases may be introduced into the process chamber via the shower head. Then, without reconfiguring a gas supply attached to the gas distribution channel, and with no gas supply switching mechanisms, a cleaning gas may be introduced into the CVD chamber via the gas distribution channel that is separate from the shower head. This is not possible in the system described by van Os.

“

In response, the Examiner's equivalents in van Os's stated components as shown in Figure 1, 2, and 3a are clearly “seperable” and van Os's gas conduits can support separate gas distribution that is unmixed. See the Examiner's analysis above.

8. Applicant states:

Art Unit: 1763

“

Claim 1 refers to *cleaning gas* injection ports for introducing a cleaning gas into the chamber. Accordingly, the cleaning gas injection ports are oriented at different angles with respect to a wall so as to optimize their cleaning effect within the CVD chamber. Kholodenko is exclusively concerned with *processing gas* injection nozzles (e.g., injection ports for introducing processing gas into a chamber).

“

The Examiner notes that the pending claims are apparatus claims, and Applicant's arguments based on gas indentity are arguments based on the intended use of the pending apparatus claims. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

Art Unit: 1763

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Rudy Zervigon whose telephone number is (571) 272-1442. The examiner can normally be reached on a Monday through Thursday schedule from 8am through 7pm. The official fax phone number for the 1763 art unit is (571) 273-8300. Any Inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Chemical and Materials Engineering art unit receptionist at (571) 272-1700. If the examiner can not be reached please contact the examiner's supervisor, Parviz Hassanzadeh, at (571) 272-1435.


